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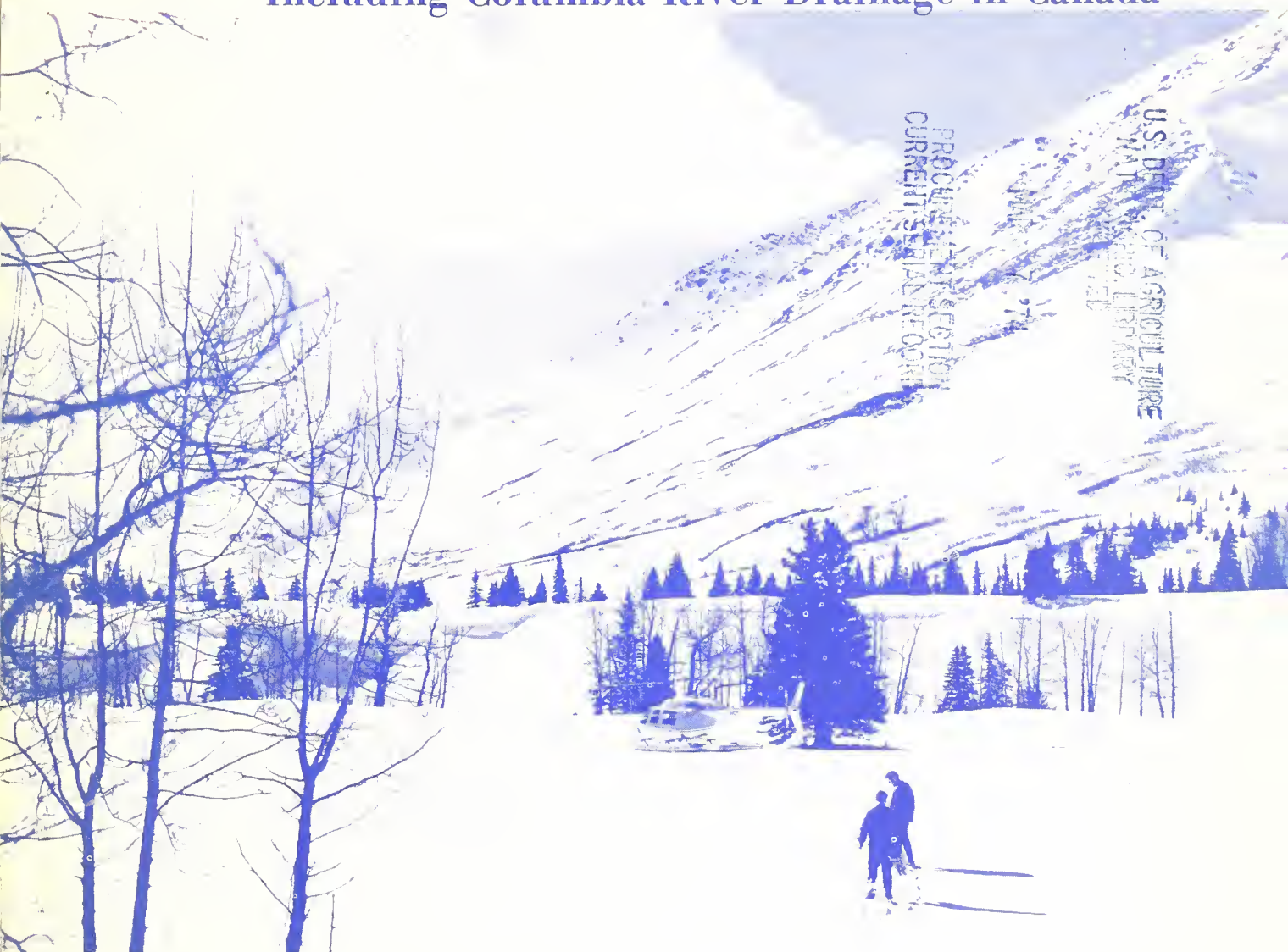
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# **WATER SUPPLY OUTLOOK FOR WESTERN UNITED STATES**

**Including Columbia River Drainage in Canada**



**U. S. DEPARTMENT of AGRICULTURE ★ SOIL CONSERVATION SERVICE**

Collaborating with  
CALIFORNIA DEPARTMENT of WATER RESOURCES  
and  
BRITISH COLUMBIA DEPARTMENT of  
LANDS, FORESTS and WATER RESOURCES

AS OF  
**FEB. 1, 1974**

## TO RECIPIENTS OF WATER SUPPLY OUTLOOK REPORTS:

Most of the usable water in western states originates as mountain snowfall. This snowfall accumulates during the winter and spring, several months before the snow melts and appears as streamflow. Since the runoff from precipitation as snow is delayed, estimates of snowmelt runoff can be made well in advance of its occurrence. Streamflow forecasts published in this report are based principally on measurement of the water equivalent of the mountain snowpack.

Forecasts become more accurate as more of the data affecting runoff are measured. All forecasts assume that climatic factors during the remainder of the snow accumulation and melt season will interact with a resultant average effect on runoff. Early season forecasts are therefore subject to a greater change than those made on later dates.

The snow course measurement is obtained by sampling snow depth and water equivalent at surveyed and marked locations in mountain areas. A total of about ten samples are taken at each location. The average of these are reported as snow depth and water equivalent. These measurements are repeated in the same location near the same dates each year.

Snow surveys are made monthly or semi-monthly from January 1 through June 1 in most states. There are about 1900 snow courses in Western United States and in the Columbia Basin in British Columbia. Networks of automatic snow water equivalent and related data sensing devices, along with radio telemetry are expanding and will provide a continuous record of snow water and other parameters at key locations.

Detailed data on snow course and soil moisture measurements are presented in state and local reports. Other data on reservoir storage, summaries of precipitation, current streamflow, and soil moisture conditions at valley elevations are also included. The report for Western United States presents a broad picture of water supply outlook conditions, including selected streamflow forecasts, summary of snow accumulation to date, and storage in larger reservoirs.

Snow survey and soil moisture data for the period of record are published by the Soil Conservation Service by states about every five years. Data for the current year is summarized in a West-wide basic data summary and published about October 1 of each year.

*Cover Photo: Snow Surveyors near Ship Creek,  
Alaska snow course.*

PHOTO BY J. J. HILL

### PUBLISHED BY SOIL CONSERVATION SERVICE

The Soil Conservation Service publishes reports following the principal snow survey dates from January 1 through June 1 in cooperation with state water administrators, agricultural experiment stations and others. Copies of the reports for Western United States and all state reports may be obtained from Soil Conservation Service, Western Regional Technical Service Center, Room 209, 511 N. W. Broadway, Portland, Oregon 97209.

Copies of state and local reports may also be obtained from state offices of the Soil Conservation Service in the following states:

STATE	ADDRESS
Alaska	204 E. 5th. Ave., Room 217, Anchorage, Alaska 99501
Arizona	6029 Federal Building, Phoenix, Arizona 85025
Colorado (N. Mex.)	P. O. Box 17107, Denver, Colorado 80217
Idaho	Room 345, 304 N. 8th. St., Boise, Idaho 83702
Montana	P. O. Box 98, Bozeman, Montana 59715
Nevada	P. O. Box 4850, Reno Nevada 89505
Oregon	1218 S. W. Washington St., Portland, Oregon 97205
Utah	4012 Federal Bldg., 125 South State St., Salt Lake City, Utah 84138
Washington	360 U.S. Court House, Spokane, Washington 99201
Wyoming	P. O. Box 2440, Casper, Wyoming 82601

### PUBLISHED BY OTHER AGENCIES

Water Supply Outlook reports prepared by other agencies include a report for California by the Water Supply Forecast and Snow Surveys Unit, California Department of Water Resources, P. O. Box 388, Sacramento, California 95802 --- and for British Columbia by the Department of Lands, Forests and Water Resources, Water Resources Service, Parliament Building, Victoria, British Columbia



# **WATER SUPPLY OUTLOOK FOR WESTERN UNITED STATES**

**Including Columbia River Drainage in Canada**

ISSUED

FEBRUARY 1, 1974

The Soil Conservation Service coordinates snow surveys conducted by its staff and many cooperators, including the Bureau of Reclamation, Corps of Engineers, Forest Service, National Park Service, NOAA, National Weather Service, Geological Survey, and other Federal Agencies, Departments of State Government, Irrigation Districts, Power Companies, and others.

The Department of Water Resources coordinates snow surveys in California.

The Water Resources Service, Department of Lands, Forests, and Water Resources directs snow surveys in British Columbia.

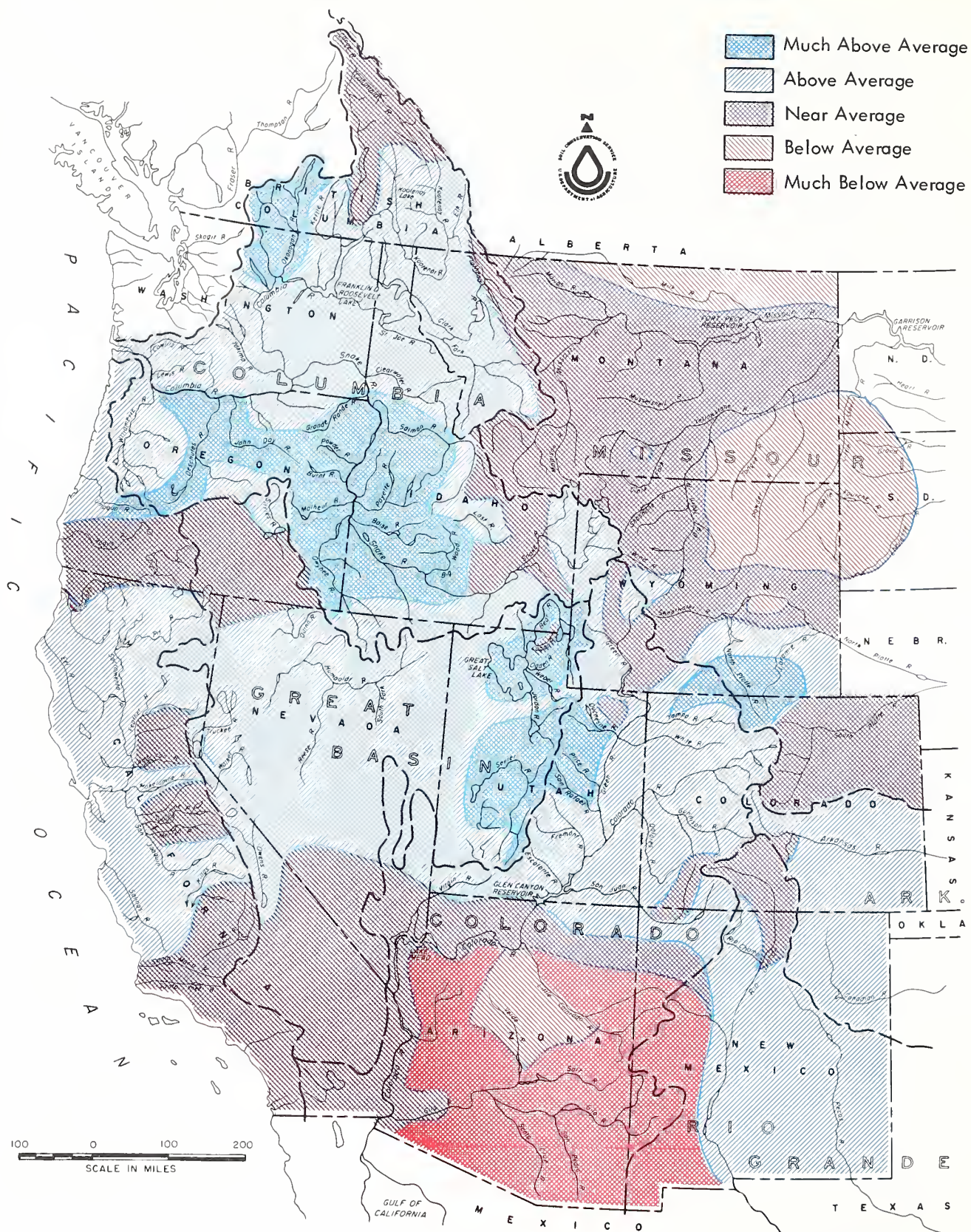
This report was prepared by the Water Supply Forecasting Unit, Engineering Division, Soil Conservation Service, from data supplied by Snow Survey Supervisors of the Soil Conservation Service in the States of Alaska, Arizona, Colorado and New Mexico, Idaho, Montana, Nevada, Oregon, Utah, Washington, and Wyoming.

Data from California was supplied by the Chief, Water Supply Forecast and Snow Survey Unit, Department of Water Resources.

Data from British Columbia was supplied by the Chief, Hydrology Division, Water Investigations Branch, Department of Lands, Forests and Water Resources.

U. S. DEPARTMENT OF AGRICULTURE  
SOIL CONSERVATION SERVICE  
KENNETH E. GRANT, ADMINISTRATOR





1974 SNOWMELT SEASON  
**PROSPECTIVE STREAMFLOW**  
 AS OF FEBRUARY 1, 1974



# WATER SUPPLY OUTLOOK

1974 SNOWMELT SEASON  
FEBRUARY 1, 1974

THE WATER SUPPLY OUTLOOK IS SATISFACTORY TO EXCELLENT FOR NEARLY ALL WESTERN AREAS. FAIR TO POOR SUPPLIES MAY BE EXPERIENCED ABOVE RESERVOIR FACILITIES ON THE UPPER GILA RIVER NEAR THE NEW MEXICO - ARIZONA BORDER, ON STREAMS DRAINING FROM WYOMING'S BIG HORN MOUNTAINS, AND FROM THE BLACK HILLS. RESERVOIR STORAGE IS GENERALLY EXCELLENT.

For the western states as a whole, the current water outlook is among the best in recent years. Even in Arizona and southwestern New Mexico, where runoff is expected to be lowest in percent of average, reservoir storage is well above average and should furnish ample water for most uses. Present prospects of 10 to 20 percent below average runoff for streams in the northeastern Wyoming - southeastern Montana - Dakotas area could become serious if weather during the remainder of the season remains dry.

Snow accumulation so far this winter has been exceptionally good in most areas. In the Columbia Basin it varies from a few percent below average to near twice the average amount. It is particularly heavy in eastern Oregon and along the Cascade Mountains in northern areas of Washington and Oregon. In the Missouri Basin, snow on the main upper Missouri and Yellowstone rivers has been near average. Headwater areas of the North Platte River show record high snow cover in some areas, but as a whole the snowpack is about a third above average. On the South Platte it is near 15 percent above average.

Snow on most watersheds of the Arkansas, Rio Grande, Colorado and Great basins varies from near 15 to 40 percent above average.

According to the British Columbia Water Resources Service, Department of Lands, Forests and Water Resources, the snowpack is above average, especially so in southern sections of the Province, and at the higher elevations.

The California Department of Water Resources reports that current conditions indicate water supplies for 1974 will be good. January storms have boosted water year runoff to 290 percent of normal for this date. Snow surveys show that even with high elevation rainfall of mid-January the snowpack has a water content that is 110 percent of average statewide. Reservoir storage is also above average in all areas.

In the Columbia Basin, streams with runoff prospects ranging from 140 to 160 percent average include the John Day, Grande Ronde, Powder,

Burnt, Malheur, Owyhee, Payette and Big Wood rivers. Similar high runoff is expected from the North Platte at Saratoga, Wyoming and adjacent watersheds, as well as from a number of streams in the Bear River Basin in Utah, Idaho and Wyoming, and in central Utah.

Snowmelt runoff forecasts, in percent of their 1958-72 averages, for several major streams are as follows: Columbia River at The Dalles, Oregon - 115 percent; Missouri near Landusky, Montana - 93 percent; North Platte at Saratoga, Wyoming - 178 percent; Rio Grande at Otowi Bridge, New Mexico - 106 percent; Colorado River Inflow to Lake Powell, Arizona - 130 percent; Salt at Intake, Arizona - 65 percent; Bear at Harer, Idaho - 151 percent; Humboldt at Palisades, Nevada - 126 percent; Sacramento, Inflow to Shasta, California - 124 percent.

Snow in Alaska is below average in most areas, and near record low in places.

## MISSOURI BASIN

Snowfall on the upper Missouri River and its tributaries in Montana has been near average so far this year. It has been a little below average (about 10 to 15 percent low) on the headwaters of the Red Rock, Marias, Teton, Sun and Milk rivers. The snow is below average in the Bear Paw Mountains and on some lower elevation watersheds as a result of melt during mild temperatures in January. Snow cover is heaviest on the Madison River with 118 percent.

Moving south into Wyoming the snowpack continues near average to about 15 percent above on the Yellowstone, Shoshone and Wind rivers. It falls off to 87 percent in the Big Horn Mountains, 60 percent on the Little Bighorn River, and 54 percent in the Black Hills.

Snow cover on the North Platte River is 131 percent, but drops to 117 percent on the South Platte.

Near 10 percent less than average flows are

## SUMMARY OF SNOW WATER EQUIVALENT MEASUREMENTS

FEBRUARY 1, 1974

MAJOR BASIN AND SUB - WATERSHED	WATER EQUIVALENT IN PERCENT OF :		MAJOR BASIN AND SUB - WATERSHED	WATER EQUIVALENT IN PERCENT OF :	
	LAST YEAR	AVERAGE		LAST YEAR	AVERAGE
MISSOURI BASIN			SNAKE BASIN		
Jefferson	150	102	Snake above Jackson, Wyo.	161	125
Madison	148	118	Snake above Hiese, Idaho	156	120
Gallatin	133	96	Snake abv.American Falls Res.	157	120
Missouri Main Stem	170	100	Henry's Fork	160	121
Yellowstone	137	107	Southern Idaho Tributaries	105	120
Shoshone	131	112	Big and Little Wood	175	130
Wind	152	111	Boise	198	140
North Platte	122	131	Owyhee	155	160
South Platte	110	117	Payette	178	135
			Malheur	135	160
			Weiser	195	163
ARKANSAS BASIN			Burnt	240	170
Arkansas	110	127	Powder	155	190
Cucharas-Purgatoire	107	180	Salmon	175	134
			Grande Ronde	225	155
			Clearwater	199	136
RIO GRANDE BASIN					
Rio Grande (Colo.)	77	112	LOWER COLUMBIA BASIN		
Rio Grande (New Mexico)	94	140	Yakima	265	146
Pecos	100	176	Umatilla	525	190
			John Day	220	145
COLORADO BASIN			Deschutes - Crooked	225	145
Green (Wyo.)	148	111	Hood	395	160
Yampa - White	119	117	Willamette	310	145
Duchesne	100	107	Lewis	309	121
Price	114	144	Cowlitz	338	135
Upper Colorado	119	124			
Gunnison	105	123	PACIFIC COASTAL BASIN		
San Juan	85	120	Puget Sound	330	160
Dolores	99	138	Olympic Peninsula	201	127
Virgin	72	136	Umpqua - Rogue	200	140
Gila	65	71	Klamath	170	110
Salt	90	116	Trinity	110	120
Verde	88	171			
GREAT BASIN			CALIFORNIA CENTRAL VALLEY		
Bear	138	119	Upper Sacramento	115	125
Logan	169	114	Feather	90	105
Ogden	116	138	Yuba	95	105
Weber	118	133	American	90	105
Provo - Utah Lake	94	126	Mokelumne	100	105
Jordan	112	138	Stanislaus	95	100
Sevier	86	138	Tuolumne	110	115
Walker - Carson	97	123	Merced	110	115
Tahoe - Truckee	90	102	San Joaquin	110	115
Humboldt	109	140	Kings	95	125
Lake Co. (Oregon)	100	70	Kaweah	80	115
Harney Basin (Oregon)	130	120	Tule	65	110
Owens (California)	90	115	Kern	85	105
UPPER COLUMBIA BASIN					
Columbia (Canada)	130	118	Data for California Watersheds supplied by Dept. of Water Resources, and for British Columbia Watersheds by Dept. of Lands, Forests and Water Resources.		
Kootenai (U.S.A. & Canada)	147	128			
Clark Fork	175	115	Average is for 1958-72 period. California averages are for the period 1931-70. Based on Selected Snow Courses determined by Dis- tribution within the Basin, Length of Record and Repetitive Monthly Measurement Schedules.		
Bitterroot	157	120			
Flathead	171	117			
Spokane	233	122			
Okanogan	221	131			
Methow	230	160			
Chelan	190	147			
Wenatchee	241	128			



expected from the Marias River, and the Missouri near Landusky. Most other Montana streams, including the Yellowstone River, should yield near average to 10 percent above average amounts. Smaller streams along the Wyoming-Montana border, such as the Little Bighorn, Powder, Tongue and Red Lodge Creek, as well as most other streams draining from the Big Horn Mountains, and from the Black Hills, currently have prospects of yielding between 70 and 90 percent of usual amounts.

Flow of the North Platte River above Seminoe Reservoir will be very high again this year, as indicated by the forecast of 178 percent. Prospects drop off for streams draining into the North Platte from the Laramie Mountains. Here, 20 percent less than average is expected. The South Platte and its tributaries are forecast at about 10 percent more than usual.

Carryover reservoir storage is 81 percent average in Montana, 158 percent average on Wyoming's Wind River, 197 percent on the North Platte and 103 percent in Colorado on the South Platte.

## ARKANSAS BASIN

Snowpack on the Arkansas River is well above normal for this time of year. Assuming snowfall and spring rains during the remainder of the season are near normal, flow of the Arkansas River at Salida, Colorado, should be near 20 percent more than usual. Outlook for the Cucharas River is for normal streamflow, while on the Purgatoire it is for near 11 percent above average. Flow of the Canadian River is also expected to be above average.

Storage in John Martin Reservoir is 17 percent of average. In New Mexico on the Canadian River, storage in Conchas Reservoir is 96 percent.

Since about 40 percent of the snow season remains, the water outlook could change. At present it is favorable.

## RIO GRANDE BASIN

For the second year in a row, the snowpack is above average on the main watersheds of the Rio Grande Basin. It ranges from 112 percent in Colorado to 140 percent in New Mexico. On the Pecos River the snow is much higher, averaging 176 percent. Even the low elevation areas have a lot of snow on the ground.

Flow of the Rio Grande near Del Norte, Colorado is expected to be 5 percent below average. Expected inflow to the river below here increases the forecast to 6 percent above average at Otowi Bridge. The Chama River

should supply near 25 percent above average, the Conejos River 11 percent. The water supply of the Pecos River is forecast at 120 percent of average.

Carryover storage in Elephant Butte is exceptionally good at 196 percent. This is over two and one-half times last year's amount. Storage in El Vado is also excellent, and over five times that of last year.

## COLORADO BASIN

The present snow cover is very good in the Upper Colorado River Basin. It varies from a low of 107 percent on the Duchesne River to a high of 144 percent on the Price River, both streams being in Utah. On the main water producing streams in Colorado and Wyoming it averages about 123 percent, but ranges from 111 percent on the upper Green River in Wyoming to 138 percent on Colorado's Dolores River.

Soil moisture conditions are generally excellent and will require a minimum of priming from snowmelt water before runoff begins. Combined with the favorable snowpack and reservoir storage conditions, this provides a fair to excellent water supply outlook next summer. Prospective runoff is lowest on the Uinta and Whiterocks rivers in Utah, with 10 to 15 percent below average anticipated. Highest flow is expected on the Little Snake near Dixon, Wyoming, at 175 percent.

Inflow to Flaming Gorge Reservoir is indicated to be near 124 percent. After contributions from the Yampa, White and Duchesne rivers, flow of the Green River at Green River, Utah is forecast at 127 percent. The Colorado near Cisco, Utah is forecast at 132 percent, while flow anticipated on the San Juan at Bluff is similar at 129 percent. Present prospects for the April-July inflow to Lake Powell are for 130 percent.

Reservoir storage in the Upper Colorado Basin is well above average.

In the Lower Colorado Basin the Virgin River is forecast to yield 10 percent above its average amount. In Arizona good water supplies are expected due to the excellent carryover reservoir storage. Snow cover is generally good, but due to very dry soils the runoff is expected to be below average. Some water shortages may occur along the upper Gila where runoff is expected to be much below average.

Salt River Project reservoirs are 75 percent full and 30 percent above average, while San Carlos holds almost four times its average.

Snow cover varies from about 30 percent below average on the Gila to near 70 percent above on the Verde.

## SELECTED STREAMFLOW FORECASTS

FEBRUARY 1, 1974

STREAM AND STATION	FORECASTS THIS YEAR		Forecast Period	Last Year's Flow In (1,000 A.F.)
	Flow In (1,000 A.F.)	Percent of Average		
SASKATCHEWAN				
St. Mary near Babb, Montana <u>1/</u>				
UPPER MISSOURI				
Beaverhead near Grant, Montana <u>2/</u>	115	108	April-Sept.	133
Big Hole near Melrose, Montana	720	104	April-Sept.	
Jefferson at Silver Star, Montana	860	100	April-Sept.	
Madison near Grayling, Montana <u>3/</u>	470	109	April-Sept.	440
Gallatin near Gateway, Montana	480	104	April-Sept.	
Sun at Gibson Dam, Montana <u>4/</u>	605	100	April-Sept.	285
Belt near Monarch, Montana				
Marias near Shelby, Montana <u>5/</u>	550	91	April-Sept.	
Missouri near Landusky, Montana <u>6/</u>	4,150	93	April-Sept.	
near Williston, North Dakota <u>7/</u>				
S. Fk. Musselshell above Martinsdale, Montana				
Milk at Eastern Crossing, Montana				
Yellowstone at Yellowstone Lake Outlet, Wyo.	930	106	April-Oct.	623
at Corwin Springs, Montana	2,030	108	April-Sept.	1,485
at Miles City, Montana <u>8/</u>				
Clarks Fork near Belfry, Montana	600	103	April-Sept.	
Shoshone below Buffalo Bill Res., Wyo. <u>9/</u>	885	107	April-Sept.	582
Wind near Dubois, Wyoming	110	108	April-Sept.	72
at Riverton, Wyoming <u>10/</u>	750	113	April-Sept.	588
below Boysen Res., Wyoming <u>11/</u>	1,129	112	April-Sept.	1,158
Bull Lake Creek near Lenore, Wyoming	200	110	April-Sept.	185
Little Popo Agie near Lander, Wyoming	53	112	April-Sept.	62
Tensleep near Tensleep, Wyoming	66	84	April-Sept.	
Medicine Lodge near Hyattville, Wyoming	18.6	88	April-Sept.	19.6
Shell Creek near Shell, Wyoming	68	93	April-Sept.	78
Big Horn near St. Xavier <u>8/</u>				
Tongue near Dayton, Wyoming	100	88	April-Sept.	122
No. Fork Powder near Hazelton, Wyoming	8.5	85	April-Sept.	8.0
PLATTE				
North Platte at Saratoga, Wyoming	1,110	178	April-Sept.	
Encampment near Encampment, Wyoming	250	178	April-Sept.	159
Laramie & Pioneer Canal, nr Woods, Wyo. <u>12/</u>	215	170	April-Sept.	
Big Thompson at Drake, Colorado <u>13/</u>	115	107	April-Sept.	
Clear at Golden, Colorado <u>14/</u>	135	107	April-Sept.	
St. Vrain at Lyons, Colorado <u>15/</u>	85	109	April-Sept.	
Cache La Poudre near Fort Collins, Colorado <u>16/</u>	267	108	April-Sept.	
ARKANSAS				
Arkansas at Salida, Colorado <u>17/</u>	375	120	April-Sept.	
Cucharas near LaVeta, Colorado	10	100	April-Sept.	
Purgatoire at Trinidad, Colorado	40	111	April-Sept.	
RIO GRANDE				
Rio Grande near Del Norte, Colorado <u>18/</u>	455	95	April-Sept.	
at Otowi Bridge, New Mexico <u>19/</u>	560	106	March-July	
Conejos near Mogote, Colorado <u>20/</u>	205	111	April-Sept.	
El Vado Res., Inflow, New Mexico	225	125	March-July	
Pecos at Pecos, New Mexico	49	120	March-July	
UPPER COLORADO				
Colorado, Grandby Res. Inflow, Colorado <u>21/</u>	255	111	April-Sept.	
near Dotsero, Colorado <u>22/</u>	1,700	118	April-Sept.	
near Cameo, Colorado <u>23/</u>	2,720	118	April-Sept.	
near Cisco, Utah <u>24/</u>	3,755	132	April-July	4,947
Lake Powell Inflow, Arizona <u>25/</u>	8,292	130	April-July	
Roaring Fork at Glenwood Springs, Colorado <u>26/</u>	820	115	April-Sept.	
Uncompahgre at Colona, Colorado	170	127	April-Sept.	

Forecasts in California provided by Department of Water Resources.  
 Average is for 1958-72 period except California. California is computed for 1921-70 period.  
 Forecasts assume average Effective Climate Conditions from Date Through Snow Melt Season.

Explanatory Notes on Forecasts listed on Inside Back Cover.

## SELECTED STREAMFLOW FORECASTS

FEBRUARY 1, 1974

STREAM AND STATION	FORECASTS THIS YEAR		Forecast Period	Last Year's Flow In (1,000 A.F.)
	Flow In (1,000 A.F.)	Percent of Average		
UPPER COLORADO (continued)				
Gunnison, Blue Mesa Res. Inflow, Colorado <u>27/</u>	950	120	April-Sept.	
near Grand Junction, Colorado <u>28/</u>	1,460	123	April-Sept.	
Dolores at Dolores, Colorado	275	118	April-Sept.	
Green at Warren Bridge, Wyoming	352	107	April-Sept.	267
at Green River, Wyoming <u>29/</u>	1,130	114	April-Sept.	720
Flaming Gorge Res. Inflow, Utah <u>27/</u>	1,459	124	April-July	
at Green River, Utah <u>30/</u>	3,601	127	April-July	3,514
Big Sandy near Big Sandy, Wyoming	64	112	April-Sept.	56
Yampa at Steamboat Springs, Colorado	300	115	April-Sept.	
near Maybell, Colorado	1,060	124	April-Sept.	
Little Snake near Dixon, Wyoming	527	175	April-Sept.	
White near Meeker, Colorado	340	115	April-Sept.	
Strawberry at Duchesne, Utah <u>40/</u>	75	134	April-July	
Duchesne near Tabiona, Utah <u>31/</u>	116	112	April-July	
at Randlett, Utah <u>40/</u>	278	126	April-July	
Lakefork below Moon Lake, Utah <u>32/</u>	73	106	April-July	
Uinta near Neola, Utah	78	89	April-July	
Whiterocks near Whiterocks, Utah	50	86	April-July	
Price, Scofield Res. Inflow, Utah <u>33/</u>	54	158	April-July	
Cottonwood near Orangeville, Utah <u>34/</u>	71	154	April-July	60
San Juan, Navajo Res. Inflow, New Mexico <u>27/</u>	800	127	April-July	
near Bluff, Utah <u>35/</u>	1,099	129	April-July	2,065
Animas at Durango, Colorado	440	104	April-Sept.	
LOWER COLORADO				
Virgin near Virgin, Utah	53	110	April-June	
Little Colorado above Lyman, Arizona	6.5	58	January-June	52
Gila near Solomon, Arizona	60	38	January-May	599
Frisco at Clifton, Arizona	32	41	January-May	304
Salt at Intake, Arizona	210	65	January-May	1,212
Tonto above Roosevelt, Arizona	27	58	January-May	229
Verde above Horseshoe Dam, Arizona	145	76	January-May	778
GREAT BASIN				
Bear at Utah-Wyo. State Line	144	129	April-July	104
at Harer, Idaho	408	151	April-Sept.	
Smith's Fork near Border, Wyoming	152	131	April-Sept.	86
Thomas Fork near Wyo.-Ida. State Line	49	152	April-Sept.	30
Logan near Logan, Utah <u>36/</u>	116	103	April-July	90
Ogden, Pine View Res. Inflow, Utah <u>27/</u>	153	150	April-June	
Weber near Oakley, Utah	120	120	April-June	
Provo near Hailstone, Utah <u>37/</u>	135	132	April-July	
Strawberry Res. Inflow, Utah	65	144	April-July	
Utah Lake Net Inflow, Utah	272	131	April-July	
Big Cottonwood near Salt Lake City, Utah	43	119	April-July	
Beaver near Beaver, Utah	27	135	April-July	38
Sevier near Hatch, Utah	46	112	April-July	78
near Gunnison, Utah	52	133	April-July	
So. Fork Humboldt near Elko, Nevada				
Humboldt at Palisades, Nevada	244	126	April-July	252
Truckee at Farad, California <u>38/</u>				
East Carson near Gardnerville, Nevada				
West Carson at Woodsfords, California				
East Walker near Bridgeport, California <u>39/</u>				
West Walker near Coleville, California	180	124	April-July	168
Donner und Blitzen near Frenchglen, Oregon	59	107	March-July	
Silvies near Burns, Oregon	119	127	March-July	
Chewaucan near Paisley, Oregon	74	85	March-July	58
Deep above Adel, Oregon	86	110	March-July	
Bidwell near Ft. Bidwell, California				
Owens below Long Valley Res., California	80	128	April-July	73

Forecasts in California provided by Department of Water Resources.  
Average is for 1958-72 period except California. California is computed for 1921-70 period.  
Forecasts assume average Effective Climate Conditions from Date Through Snow Melt Season.

Explanatory Notes on Forecasts listed on Inside Back Cover.



## SELECTED STREAMFLOW FORECASTS

FEBRUARY 1, 1974

STREAM AND STATION	FORECASTS THIS YEAR		Forecast Period	Last Year's Flow In (1,000 A.F.)
	Flow In (1,000 A.F.)	Percent of Average		
UPPER COLUMBIA				
Columbia above Steamboat Rapids, B. C.				
at Birchbank, British Columbia <u>40/</u>	48,700	105	April-Sept.	
at Grand Coulee, Washington <u>40/</u>	76,500	110	April-Sept.	
below Rock Island, Washington	84,500	111	April-Sept.	
Kootenai at Libby, Montana	9,200	115	April-Sept.	5,498
at Leonia, Idaho	10,600	115	April-Sept.	
Blackfoot near Bonner, Montana	1,150	114	April-Sept.	420
So. Fk. Flathead nr Columbia Falls, Montana <u>40/</u>	2,500	106	April-Sept.	1,450
Flathead at Columbia Falls, Montana <u>40/</u>	6,800	105	April-Sept.	4,164
near Polson, Montana <u>40/</u>	8,300	108	April-Sept.	4,678
Clark Fork above Missoula, Montana	2,000	113	April-Sept.	718
near Plains, Montana <u>40/</u>	14,000	112	April-Sept.	6,703
at Whitehorse Rapids, Idaho	15,700	112	April-Sept.	
Bitterroot near Darby, Montana	680	122	April-Sept.	301
Priest near Priest River, Idaho <u>41/</u>				
Pend Oreille below Box Canyon, Washington	18,300	114	April-Sept.	
Kettle near Laurier, Washington	2,400	125	April-Sept.	
Spokane at Post Falls, Idaho <u>42/</u>	3,800	127	April-Sept.	
Similkameen near Nighthawk, Washington	1,980	130	April-Sept.	
Okanogan near Tonasket, Washington	2,350	135	April-Sept.	
Methow near Pateros, Washington	1,420	135	April-Sept.	
Stehekin at Stehekin, Washington	1,150	127	April-Sept.	
Chelan at Chelan, Washington <u>43/</u>	1,650	130	April-Sept.	
Wenatchee at Peshastin, Washington	2,180	120	April-Sept.	
SNAKE				
Snake above Palisades Res., Wyoming <u>44/</u>	3,240	124	April-Sept.	1,966
near Heise, Idaho <u>45/</u>	4,750	121	April-Sept.	
near Blackfoot, Idaho <u>46/</u>				
at Weiser, Idaho				
Grey's above Palisade, Wyoming	490	126	April-Sept.	293
Salt above Palisade, Wyoming	425	116	April-Sept.	318
Henry's Fork near Ashton, Idaho <u>47/</u>				
Teton near St. Anthony, Idaho				
Blackfoot Reservoir Inflow, Idaho				
Big Lost near MacKay, Idaho <u>48/</u>	220	123	April-Sept.	
Portneuf at Topaz, Idaho				
Salmon Falls Creek nr San Jacinto, Idaho				
Big Wood, Inflow to Magic Res., Idaho <u>49/</u>	450	150	April-Sept.	
Bruneau near Hot Springs, Idaho				
Boise near Boise, Idaho <u>50/</u>	2,150	133	April-Sept.	
Owyhee near Owyhee, Nevada <u>51/</u>	79	116	April-July	
Owyhee Res. Net Inflow, Oregon <u>27/</u>	750	147	February-July	378
Malheur near Drewsey, Oregon	157	143	February-July	
Payette near Horseshoe Bend, Idaho <u>52/</u>	2,750	149	April-Sept.	
Weiser above Crane Creek, Idaho <u>40/</u>				
Burnt near Hereford, Oregon <u>40/</u>	75	156	February-July	
Powder near Sumpter, Oregon	82	149	April-July	
Eagle above Skull Creek, Oregon	270	142	April-Sept.	
Imnaha at Imnaha, Oregon	400	130	April-Sept.	
Salmon at Whitebird, Idaho	9,100	131	April-Sept.	
Lostine near Lostine, Oregon	159	127	April-Sept.	
Grande Ronde at LaGrande, Oregon	304	154	March-Sept.	72
Clearwater at Spalding, Idaho	10,000	117	April-Sept.	
LOWER COLUMBIA				
Yakima at CleElum, Washington <u>53/</u>	1,140	118	April-Sept.	
near Parker, Washington <u>54/</u>	2,080	120	April-Sept.	
Naches near Naches, Washington <u>55/</u>	1,080	120	April-Sept.	
Walla Walla, So. Fk. near Milton, Oregon	84	106	March-Sept.	

Forecasts in California provided by Department of Water Resources.  
Average is for 1958-72 period except California. California is computed for 1921-70 period.  
Forecasts assume average Effective Climate Conditions from Date Through Snow Melt Season.

Explanatory Notes on Forecasts listed on Inside Back Cover.

## SELECTED STREAMFLOW FORECASTS

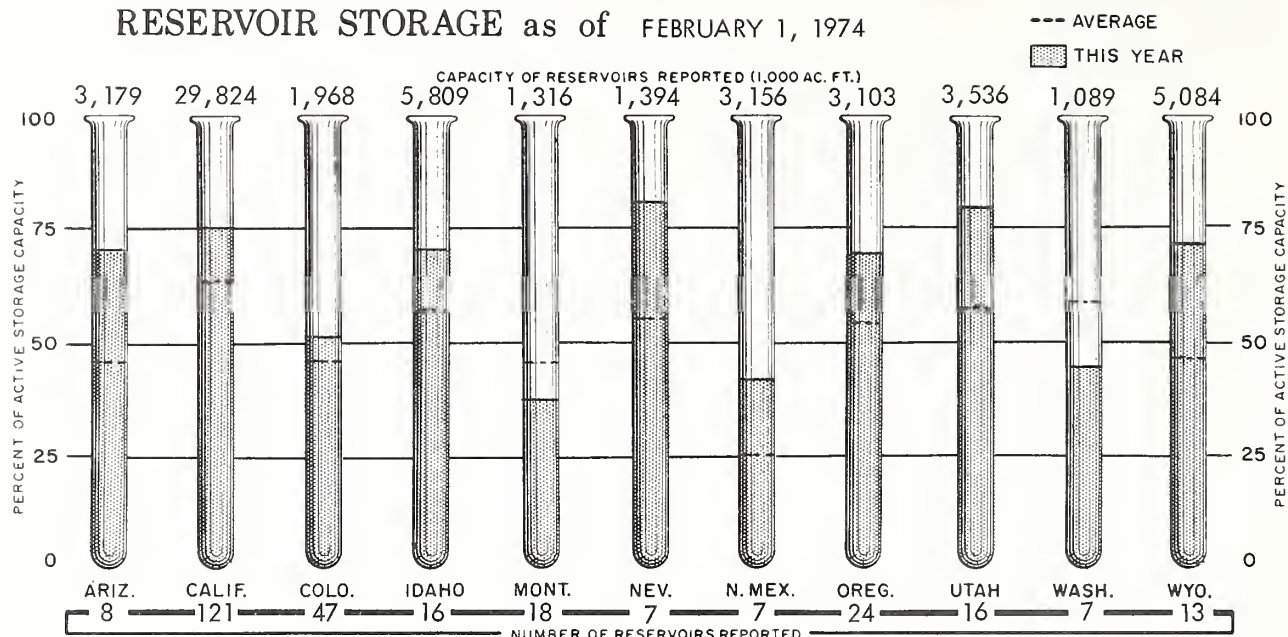
FEBRUARY 1, 1974

STREAM AND STATION	FORECASTS THIS YEAR		Forecast Period	Last Year's Flow In (1,000 A.F.)
	Flow In (1,000 A.F.)	Percent of Average		
LOWER COLUMBIA (continued)				
Umatilla at Pendleton, Oregon	250	125	March-Sept.	
John Day, Middle Fork at Ritter, Oregon	205	159	March-July	
North Fork at Monument, Oregon	870	161	April-Sept.	
Crooked near Post, Oregon	200	116	February-July	
Deschutes at Benham Falls, Oregon 40/	607	110	April-Sept.	
Columbia at The Dalles, Oregon 40/	120,000	115	April-Sept.	
Hood near Tucker Bridge, Oregon 40/	405	122	April-Sept.	
McKenzie near Vida, Oregon	1,476	117	April-Sept.	
Santiam, South, at Waterloo, Oregon	657	105	April-Sept.	
North, at Mehama, Oregon 40/	944	108	April-Sept.	
Clackamas at Estacada, Oregon	878	111	April-Sept.	
Willamette at Salem, Oregon 40/	5,624	114	April-Sept.	
Lewis at Ariel, Washington 56/	1,700	125	April-Sept.	
Cowlitz at Castle Rock, Washington 57/	3,600	128	April-Sept.	
NORTH PACIFIC COASTAL				
Dungeness near Sequim, Washington				
Umpqua, No., near Toketee Falls, Oregon 40/	207	125	April-Sept.	
Rogue at Raygold, Oregon	957	108	April-Sept.	613
Klamath Lake, Net Inflow, Oregon	971	108	February-Sept.	628
Trinity at Lewiston, California	810	131	April-July	690
CALIFORNIA CENTRAL VALLEY 40/				
Sacramento, Inflow to Shasta, California	2,200	124	April-July	1,538
Feather near Oroville, California	2,070	111	April-July	1,913
Yuba at Smartville, California	1,100	102	April-July	1,002
American, Inflow to Folsom Res., Calif.	1,330	101	April-July	1,260
Cosumnes at Michigan Bar, California	180	124	April-July	117
Mokelumne, Inflow to Pardee Res., Calif.	530	114	April-July	520
Stanislaus, Inflow to Melones Res., Calif.	720	100	April-July	738
Tuolumne, Inflow to Don Pedro Res., Calif.	1,300	109	April-July	1,414
Merced, Inflow to Excheque Res., Calif.	660	109	April-July	730
San Joaquin, Inflow to Millerton Lake, Calif.	1,400	117	April-July	1,546
Kings, Inflow to Pine Flat Res., California	1,380	119	April-July	1,660
Kaweah, Inflow to Terminus Res., California	290	107	April-July	451
Tule, Inflow to Success Res., California	60	102	April-July	111
Kern, Inflow to Isabella Res., California	400	95	April-July	724
ALASKA				
Chena at Fairbanks, Alaska				
Salcha near Salchaket, Alaska				

Forecasts in California provided by Department of Water Resources.  
Average is for 1958-72 period except California. California is computed for 1921-70 period.  
Forecasts assume average Effective Climate Conditions from Date Through Snow Melt Season.

Explanatory Notes on Forecasts listed on Inside Back Cover.

## RESERVOIR STORAGE as of FEBRUARY 1, 1974



Streamflow has been below average for six months and is expected to remain this way through the spring snowmelt period. The winter-spring runoff is currently expected to be near 60 to 75 percent average on the Salt, Tonto, Verde and Little Colorado rivers, about 40 percent of average on the Gila and Frisco rivers.

### GREAT BASIN

Snow cover in the Great Basin is very favorable in most areas. This, combined with excellent reservoir storage, foreshadows generally good to excellent water supplies next summer for practically all areas. The only area of significantly low snow cover is in Lake County, Oregon where the snow is 70 percent of average.

On other watersheds, February 1st surveys revealed a snowpack which ranges from 102 percent of average on the Tahoe-Truckee Watershed in Nevada, to 160 percent on Utah's lower Sevier and Beaver rivers. The snow on most watersheds varies between 10 to 40 percent above average.

Streamflow forecasts for Utah streams range from a low of 92 percent on Cache Valley's Blacksmith Fork River to a high of 198 percent on Lost Creek near Croydon, a tributary of the Weber River. Inflow to Pineview Reservoir on the Ogden River is forecast at 150 percent. Near 20 to 50 percent above average flows are expected from streams near Salt Lake and Provo, from the Weber River, and the Bear River in

Wyoming and Idaho. In the Sevier River Basin, forecasts range from average for Chalk Creek near Fillmore to over 150 percent on the San Pitch River tributaries.

At 139 percent of average, reservoir storage in Utah is excellent. Storage in the Sevier River is particularly good, with 204 percent.

Forecast flows for Oregon streams range from 85 percent on the Chewaucan near Paisley to 127 percent on the Silvies near Burns. In Nevada, water users on the Humboldt River can anticipate the flow at Palisades to be near 126 percent of average. On the lower Humboldt, storage in Rye Patch Reservoir is 131 percent. On the Owyhee River, the Wild Horse Reservoir contains 72 percent of capacity. This is over three times the usual amount.

Flow of the Sierra-Nevada streams into Nevada is expected to be near 20 to 30 percent above average. Reservoir storage is now 147 percent in the Truckee Watershed, 135 percent in the Carson and 138 percent in the Walker River. Snow cover is well above average in eastern and central Nevada.

### COLUMBIA BASIN

Prospects for next summer's water supply are good to excellent throughout the Columbia Basin. While all streams in the Basin are expected to yield average or greater flows, most of them should flow at 10 to 35 percent above their average amounts.



## STORAGE IN LARGE RESERVOIRS

FEBRUARY 1, 1974

BASIN AND NAME OF RESERVOIR	CAPACITY (1,000 A.F.)	STORAGE (1,000 A.F.)	STORAGE PERCENT AVERAGE	BASIN AND NAME OF RESERVOIR	CAPACITY (1,000 A.F.)	STORAGE (1,000 A.F.)	STORAGE PERCENT AVERAGE
UPPER MISSOURI				UPPER COLUMBIA			
Belle Fourche	185	136	154	Chelan	676	298	94
Boysen	550	456	158	Coeur d'Alene	225	386	229
Buffalo Bill	373	152	92	Duncan	1,347	467	---
Canyon Ferry	2,043	1,664	101	Flathead	1,791	1,396	112
Fort Peck	19,410	16,600	118	Hungry Horse	3,428	2,508	101
Garrison	24,790	19,300	134	Kootenay	673	623	99
Hebgen	377	230	114	Lake Koocanusa	3,522	2,176	---
Keyhole	192	153	214	Lower Arrow	3,083	771	190
Lake Francis Case	5,816	3,366	105	Noxon Rapids	335	306	95
Lake Sharpe	1,900	1,727	100	Pend Oreille	1,155	840	192
Oahe	23,630	18,667	125	Roosevelt	5,232	731	19
Tiber	1,347	525	91	Upper Arrow	4,061	941	108
Bighorn	1,356	940	118	LOWER COLUMBIA			
PLATTE				Cougar	155	24	70
City of Denver (5)	507	435	104	Detroit	300	63	105
Colo-Big Thompson (3)	718	672	161	Green Peter	270	63	86
Glendo	784	449	143	Hills Creek	200	47	124
Pathfinder	1,016	926	271	Lookout Point	337	63	97
Seminole	1,010	700	178	Prineville	153	92	90
ARKANSAS				Wickiup	200	136	92
Conchas	273	178	96	Yakima Res. (5)	1,066	472	75
John Martin	354	14	17	SNAKE			
Turquoise	130	69	---	American Falls	1,125	1,038	166
RIO GRANDE				Anderson Ranch	423	212	83
Elephant Butte	2,195	864	196	Arrowrock	287	279	116
El Vado	195	122	---	Brownlee	980	736	117
UPPER COLORADO				Cascade	653	422	123
Blue Mesa	830	468	95	Dworshak	2,016	1,202	---
Flaming Gorge	3,749	2,898	176	Jackson	847	644	119
Navajo	1,696	1,041	180	Lucky Peak	278	83	89
Powell	25,002	17,419	207	Owyhee	715	511	125
Starvation	152	146	---	Palisades	1,200	959	123
LOWER COLORADO				Warm Springs	191	72	90
Havasu	619	533	98	PACIFIC COASTAL			
Mead	26,159	20,160	116	Clair Engle	2,448	2,480	123
Mohave	1,810	1,625	97	Clear Lake	440	294	143
Salt River Res. (4)	1,755	1,427	133	Nacimiento	350	206	119
San Carlos	949	612	358	Ross	1,203	1,231	129
Verde River Res. (2)	318	126	40	Upper Klamath	584	466	130
GREAT BASIN				CALIFORNIA CENTRAL VALLEY			
Bear	1,421	1,097	116	Almanor	1,308	1,039	151
Lahontan	291	246	135	Berryessa	1,602	1,629	104
Rye Patch	157	113	131	Bullards Bar	930	795	159
Sevier Bridge	236	194	233	Folsom	1,010	611	106
Strawberry	274	210	185	Isabella	570	220	125
Tahoe	732	618	145	McClure	1,026	653	127
Utah	884	849	151	Millerton	521	433	110
Willard Bay	193	159	144	Oroville	3,484	2,826	117
				Pine Flat	1,013	654	108
				Shasta	4,500	3,613	107

Reservoir Storage Data Provided by Bureau of Reclamation, Corps of Engineers, Geological Survey, and water using organizations. Data from California and British Columbia provided by Department of Water Resources and Department of Lands, Forests and Water Resources, respectively.

Streams with the lowest runoff prospects -- about average to 10 percent above -- are the upper Columbia in Canada, Montana's Flathead River, Idaho's Lemhi River, and several smaller tributaries to the upper Snake River.

Highest runoff prospects (about 140 to 160 percent) are forecast for eastern Oregon and south central Idaho streams such as the John Day, Grande Ronde, Powder, Burnt, Malheur, Owyhee, Payette and Big Wood rivers. Other streams where the flow will also be high, (about 130 to 140 percent), include the Salmon and Boise rivers in Idaho, the Imnaha in Oregon, British Columbia's Okanagan-Similkameen and Washington's Methow and Chelan rivers.

Snow accumulation to February 1 has been average or above on all watersheds except Idaho's Big and Little Lost rivers where it has only been 5 percent below average.

Areas where the snow ranges from about 145 to 190 percent include all Oregon tributary streams, the Weiser and Priest rivers in Idaho, the Yakima, Chelan and Methow rivers in Washington. On many of these watersheds the snow essentially equals or exceeds the average for April 1. The snowpack here ranks among the three or four highest years of record at many high elevation snow courses.

The snow ranges from about 20 to 40 percent above average on the Kootenay and lower Columbia watersheds in British Columbia, on most of the major water producing areas of Idaho and Wyoming, and on Washington's Wenatchee, Lewis and Cowlitz rivers. The upper Columbia and the Montana streams hold near 10 to 20 percent more than average. Snow on Idaho and Wyoming's southern tributaries to the Snake range from 10 to 30 percent above average.

Soil moisture is above average in most areas.

Flow of the Columbia River at The Dalles is anticipated to be near 15 percent more than average.

Reservoir storage is good, and above average in most cases. Considering the excellent streamflow prospects, this year's water supply should be ample to meet all normal water demands.

## ALASKA

Snowfall has been lighter than normal over nearly all of the watersheds monitored by snow course networks in Alaska. Some areas have near record low snowpacks.

The Upper Copper River basin snowpack level is nearly as low as during the record year of 1970. The other extreme is found on the Kenai Peninsula where the current level is 7 percent above the short-term average.

Elsewhere in the state the snow on the Tanana-Chena basin stands at 64 percent of the usual amount. It is 27 percent below last year. The Matanuska and Susitna watersheds have accumulated 77 percent of average.

Snow courses near Anchorage indicate the snowpack is 20 percent below average and 10 percent less than last year.

## CALIFORNIA

The California Department of Water Resources, coordinating agency for snow surveys and water supply forecasting in California, reports that present watershed conditions indicate water supplies will be good throughout the State in 1974.

Precipitation over the State has averaged 150 percent for the water year to date. Except for the southeast desert area and the extreme South Coast, all areas have had above average precipitation. In the Central Valley watershed precipitation has ranged from 130 percent of average on the valley floor to about 220 percent in the Upper Sacramento River Basin.

During January both precipitation and temperatures were extremely erratic. During early January, temperatures were well below normal and a storm during the first week deposited snow to near sea level elevations in many areas. In mid-January temperatures rose to well above average throughout the State and a major storm during this period dumped heavy rain in Northern and Southern California. The storm pattern left a below-average path through the central part of the State from the Bay Area to the Central Sierra. Northern California experienced flooding as the storm deposited up to 6 inches on January 16 in the Eel River Basin. Rainfall totaled 12 to 17 inches over the entire northern area during the week of January 13 to 20.

February 1 snow surveys show that water storage in the snowpack remains above average in all areas despite the high elevation rain of mid-January. Snow water content ranges from 105 percent of average in the Lahontan watersheds to 120 percent in North Coastal watersheds. The snow at elevations above 5,000 feet held the warm rainfall in areas where the pack was two feet or more in depth. However,

snow surveys show that the snowpack below about 8,000 feet is now physically similar to a ripening condition that usually develops in March. Densities are now 35 to 40 percent in basins north of the Merced River, and 30 to 35 percent southward of the San Joaquin Basin. Throughout the State, at lower elevations where depths were less than 2 feet, the warm mid-month rain was temporarily stored in the snow until the pack became isothermal and melted away. Present snow conditions in most of Northern California, and at lower elevations throughout the State, indicate the possibility exists for faster than usual melt off this coming spring.

Runoff during the first four months of the water year has been 290 percent of average for the State, ranging from 115 percent in the South Coastal area to 315 percent in the North Coastal area. Runoff in Central Valley streams has been 270 percent of average for the water year. January runoff contributed heavily to these water year totals. Runoff during January ranged from 120 percent of average in the Bay Area to 415 percent in the Central Coastal area. Many streams in Northern California reached flood stages and the inflow to Shasta Lake set a new record peak flow of 215,000 cfs during the mid-January storm.

Reservoir storage in California's 121 major reservoirs was 115 percent of average on February 1. All areas of the State have average or above average supplies in storage. Impoundments range from normal in the seven reservoirs of the Lahontan area to 125 percent of normal in the 26 reservoirs reported from the South Coastal area. The U. S. Bureau of Reclamation reports that Folsom, Millerton, and Shasta Lakes will all fill this year if normal spring precipitation occurs. Clair Engle Lake is full and spilling. All of the remaining 30 major reservoirs in the Sacramento Valley are storing near or above average amounts for this date. The San Joaquin Valley's 27 major reservoirs are storing 110 percent of the February 1 average. With only a few of the smaller reservoirs below average for this date, ample supplies of surface stored water will be available this year in all areas of California.

The February forecast of statewide runoff for the water year is 155 percent of average, if future precipitation is normal. Runoff forecasts range from 105 percent in the South Coastal area to 180 percent on the North Coastal area. Water year runoff will amount to about 115 percent of average for the San Joaquin Valley and 165 percent for the Sacramento River Basin.





# EXPLANATION of STREAMFLOW FORECASTS

All flows are observed flows except as adjusted for: 1/ Storage change in Lake Sherburne. 2/ Storage change in Lima and Clark Canyon reservoirs. 3/ Storage change in Hebgen Lake. 4/ Storage change in Gibson Reservoir and measured diversions. 5/ Storage change in Two Medicine, Four Horns, Lake Francis and Swift reservoirs. 6/ Storage change in Canyon Ferry and Tiber reservoirs. 7/ Changes as indicated in (6/), (8/), plus storage change in Fort Peck. 8/ Storage change in Boysen, Buffalo Bill and Yellowtail reservoirs. 9/ Storage change in Buffalo Bill Reservoir plus Heart Mountain diversion. 10/ Storage change in Pilot Butte and Bull Lake reservoirs plus Wyoming canal diversion.

11/ Changes indicated in (10/) plus storage change in Boysen Reservoir. 12/ Plus diversions to Cache LaPoudre. 13/ Plus by-pass to power plants. 14/ Minus diversion thru Gumlick Tunnel. 15/ Storage change in Price Reservoir. 16/ Minus diversions from North Platte, Laramie and Colorado rivers plus measured diversions above station. 17/ Storage change in Clear Creek, Twin Lakes and Turquoise reservoirs minus diversions from Colorado River. 18/ Storage change in Rio Grande, Santa Maria and Continental reservoirs. 19/ Storage change in El Vado and Abiquiu reservoirs. 20/ Storage change in Platoro Reservoir.

21/ Storage change in Grandby Reservoir as furnished by U.S.B.R. plus diversions by Adams Tunnel and Grand River Ditch. 22/ Changes as indicated in (21/) plus diversions thru Roberts, Gumlick and Moffat tunnels and storage change in Dillon, Homestake, Williams Fork, Green Mountain and Willow Creek reservoirs. 23/ Changes indicated in (22/) and (26/). 24/ Storage change in Blue Mesa Reservoir. 25/ Changes indicated in (24/), (30/) and (35/) and storage change in Lake Powell. 26/ Diversions to Arkansas River plus storage change in Ruedi Reservoir. 27/ (Inflow record as computed by U. S. Bureau of Reclamation.) 28/ Storage change in Taylor, Blue Mesa and Morrow Point reservoirs. 29/ Storage change in Fontenelle Reservoir. 30/ Storage change in Flaming Gorge Reservoir.

31/ Plus diversion through Duchesne Tunnel. 32/ Storage change in Moon Lake Reservoir. 33/ Storage change in Scofield Reservoir. 34/ Storage change in Joe's Valley Reservoir. 35/ Storage change in Navajo Reservoir. 36/ Plus U. P. & L. Co. tailrace and Logan, Hyde Park and Smithfield canals. 37/ Minus diversions thru Duchesne Tunnel and Weber-Provo Canal. 38/ Storage change in Lake Tahoe and Boca reservoirs (Forecast by Truckee Basin Committee.) 39/ Storage change in Bridgeport Reservoir. 40/ Corrected for major upstream impairments -- represents simulated natural flow conditions.

41/ Storage change in Priest Lake. 42/ Storage change in Coeur d'Alene Lake and diversions by Spokane Valley Farms Co. and Rathrum Prairie canals. 43/ Storage change in Lake Chelan. 44/ Storage change in Jackson Lake. 45/ Storage change in Jackson Lake and Palisade reservoirs. 46/ Storage change in Jackson Lake, Palisades, Island Park, Henry's Lake, Grassy Lake plus diversions between Heise and Blackfoot. 47/ Storage change in Henry's Lake and Island Park reservoirs. 48/ Storage change in MacKay Reservoir and diversion in Sharp Ditch. 49/ Combined flow Big Wood near Bellevue and Camas Creek near Blaine. 50/ Storage change in Arrowrock, Anderson Ranch and Lucky Peak reservoirs.

51/ Storage change in Wild Horse Reservoir. 52/ Storage change in Cascade and Deadwood reservoirs. 53/ Storage change in Keechelus, Kachess and CleElum reservoirs plus diversion by Kittitas Canal. 54/ Changes indicated in (52/) plus storage change in Bumping and Rimrock Lakes plus diversion by Roza, Union Gap, New Reservation, Old Reservation and Sunrise canals. 55/ Storage change in Bumping and Rimrock lakes and diversions by Tieton, Selah Valley, Wapatox canals and City of Yakima. 56/ Storage change in Merwin, Yale and Swift reservoirs. 57/ Storage change in Mayfield Reservoir.

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